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BANK LOANS AND THE BUSINESS CYCLE

WARREN M. PERSONS

THE curves of our Index Chart for 1903–14 were obtained by sorting twelve statistical series into three groups of four each, and then averaging the series of each group. The criterion for sorting the series was statistical; that is, when corrected for seasonal influence and normal growth the series of each group moved in the same general direction (upward or downward) at the same time. The three groups, however, did not undulate simultaneously but moved in a well defined sequence.

After the statistical analysis of the series had been completed, it was noticed that the series of each of the three groups possessed economic similarity as well as statistical similarity. The series of the first groups were all connected with speculation in securities, those in the second group with business activity, and those in the third group with banking. The established sequence of fluctuations of the three curves and the constitution of the groups upon which they are based enabled us to explain the business cycle in economic terms. That is, the movements of speculation, business, and banking could be explained by the repercussions that such movements might be expected to have upon each other. In this connection the following question has arisen: is it possible to secure an independent check of the reality of the movements of speculation, business, and banking, as given by curves A, B, and C? In other words, is the situation during the business cycle accurately described by the Index Chart?

Data for checking the relationship between curves A and B of the Index Chart are available in the annual *Report of the Comptroller of the Currency*. In that report all loans and discounts of national banks are classified so that they may be assigned to the two groups: (*a*) on demand secured by stocks, bonds, or other personal securities, and on time secured by stock, bonds, or other personal securities including real estate mortgages, and (*b*) all other loans and discounts.[1] It is possible to secure this twofold classification of loans and discounts for central reserve cities, for other reserve cities, and for country banks, but the classification is available only for one date each year, sometime between June and September, inclusive.

For one date each year, then, it is possible to obtain for the national banks of New York City and other sections of the country the volume of loans made primarily (*a*) for speculative purposes secured mainly by stocks, bonds, and mortgages[2] and (*b*) for business purposes not secured by collateral. The ratios between (*b*) loans primarily for business purposes and (*a*) those primarily for speculative purposes each year from 1903 to 1919 for various groups of banks are given in Table I. It will be noticed that there is a sharp downward break in the continuity of the ratios after the federal reserve

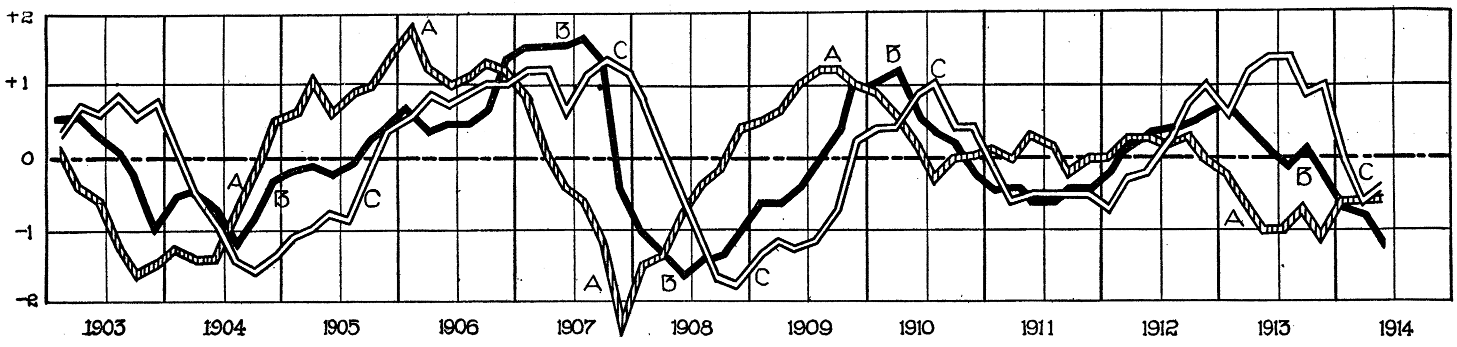

CHART I. — THE INDEX OF GENERAL BUSINESS CONDITIONS, 1903–14.

(A) *Speculation:* New York Bank Clearings, Average Price of Industrial Stocks, Average Price of Railroad Stocks, and Average Price of Railroad Bonds.

(B) *Business:* Bank Clearings of the United States Outside New York City, Bradstreet's Index of Wholesale Commodity Prices, United States Bureau of Labor Statistics' Index of Wholesale Commodity Prices, and Pig-Iron Production.

(C) *Banking:* Interest Rates on 60–90 Day and on 4–6 Months Commercial Paper in New York City, Loans and Deposits of New York City Clearing House Banks (both inverted).

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[1] Class *a* consists of paper:

1. On demand, secured by stocks and bonds.
2. On demand, secured by other personal securities, including merchandise, warehouse receipts, etc.
3. On time, secured by stocks and bonds.
4. On time, secured by other personal securities, including merchandise, warehouse receipts, etc.
5. Secured by real estate, mortgages or other liens on realty.

Class *b* consists of paper:

6. On demand with one or more individual or firm names.
7. On time with two or more individual or firm names.
8. On time, single-name paper (one person or firm) without other security.
9. Acceptances purchased or discounted.

In 1915 the two classes of time paper not secured by collateral (Items 7 and 8) were combined (*Report* for 1915, vol. 1, p. 52). Paper "secured by other personal securities, including merchandise, warehouse receipts, etc." (Items 2 and 4) was combined with paper "secured by stocks and bonds" (Items 1 and 3) previous to 1915. For our purpose it might be desirable to include the paper "secured by merchandise, warehouse receipts, etc." with the items of class *b* but such paper is not reported separately previous to 1915 (See *Report* for 1919, vol. 2, p. 756).

[2] On June 30, 1919 the composition of class *a* was, in millions of dollars:

Paper secured by stocks and bonds	$3,438
Paper secured by real estate mortgages, etc.	184
Paper secured by "other personal securities"	1,332
Total	$4,954

Paper secured by stocks, bonds, and mortgages thus constituted 73 per cent of the total. On the same date class *b* loans amounted to 6,056 million dollars.

Table I. — Ratio of *Unsecured* Loans to *Collateral* Loans for All National Banks, for Those in Central Reserve and Other Reserve Cities, and for Country Banks.

(*Unit: 1 per cent*)

Date of call	All national banks	National Banks in				
		New York	Chicago	St. Louis	Other reserve cities	Country
1903, Sept. 9	152	61	189	118	136	239
1904, Sept. 6	145	50	262	121	136	246
1905, Aug. 25	149	48	260	122	136	253
1906, Sept. 4	161	59	216	119	146	244
1907, Aug. 22	175	76	211	110	157	248
1908, Sept. 23	147	46	206	104	145	240
1909, Sept. 1	155	52	207	104	146	247
1910, Sept. 1	169	69	172	102	158	247
1911, June 7	171	74	193	119	155	246
1912, June 14	169	74	185	142	151	243
1913, June 4	174	75	162	145	158	240
1914, June 30	167	69	212	125	156	235
1915, June 23	139	69	114	144	137	190
1916, June 30	137	64	193	170	133	193
1917, June 20	150	93	167	191	148	190
1918, June 29	152	123	153	149	140	182
1919, June 30	122	82	117	116	110	167

system became effective in 1915. It also appears that the ratios of business loans to speculative loans for different groups of banks are dissimilar. The banks of New York City had the smallest percentages of business loans, ranging from 46 to 123 per cent of loans based on collateral. Then, in order of magnitude, came St. Louis, 102 to 191 per cent; reserve city banks, 110 to 158 per cent; Chicago, 114 to 262 per cent; country banks, 167 to 253 per cent. The percentages for all national banks ranged from a minimum of 122 in 1919 to a maximum of 175 in 1907. Chart II presents these ratios graphically for the various groups of banks.

The problem before us is to relate (1) the changes from year to year in the ratios between the two classes of loans as determined from the reports of the Comptroller of the Currency to (2) the changes from year to year in the ratios between business and speculation as determined by curves B and A, respectively, of the Index Chart. Since speculation in securities is largely concentrated in New York we will use the ratios of business loans to speculative loans for that city in our comparison of results. The argument is this: we should expect the changes in the ratios to be paralleled by similar changes in the ratios of the ordinates of curve B to curve A for corresponding dates. Table II presents a comparison of the year-to-year changes in the ratios of business loans to speculative loans determined by the two independent methods. In the eleven years compared there is only one case (1911) of opposition of the direction of movement as determined by the two methods. We conclude, therefore, that fluctuations in business and speculative activity during the business cycle, represented by curves B and A, are closely paralleled by fluctuations in the ratios between the two classes of loans for New York banks. In other words, when speculative activity increases faster than business activity, as shown by the Index Chart, the ratio of loans on collateral security to unsecured loans of New York national banks also increases.

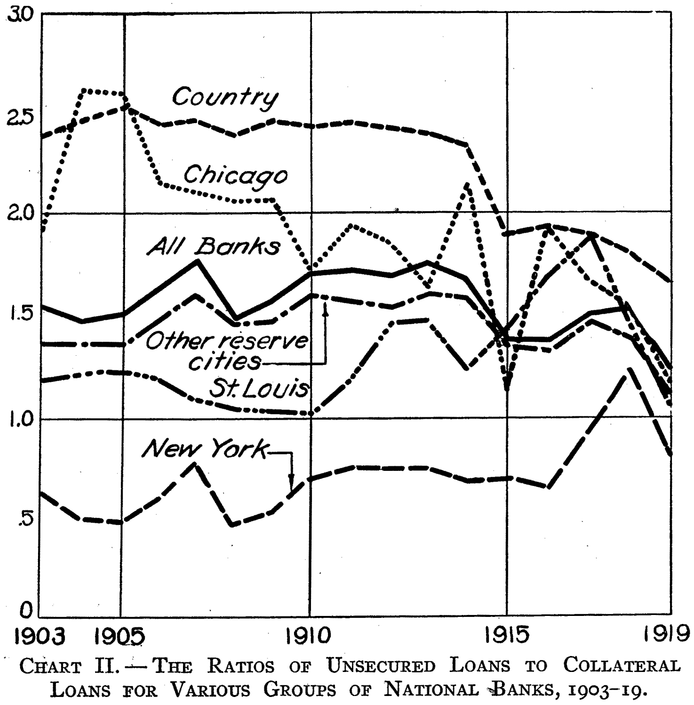

Chart II. — The Ratios of Unsecured Loans to Collateral Loans for Various Groups of National Banks, 1903–19.

Table II. — Comparison of Year-to-Year Changes (1) in the Relative Activity of Business and Speculation as Shown by the Index Chart, (2) in the Ratios of Unsecured Loans to Collateral Loans in New York, and (3) in Similar Ratios for All National Banks.

Date of call	Direction of change in ratio from preceding year of curve B to curve A †	Year-to-year changes in the ratios of unsecured loans to collateral loans for	
		New York *	All banks
1904, Sept. 6	−	−.11	−.07
1905, Aug. 25	0	−.02	+.04
1906, Sept. 4	+	+.11	+.12
1907, Aug. 22	+	+.17	+.14
1908, Sept. 23	−	−.30	−.28
1909, Sept. 1	+	+.06	+.08
1910, Sept. 1	+	+.17	+.14
1911, June 7	−	+.05	+.02
1912, June 14	+	0	−.02
1913, June 4	+	+.01	+.05
1914, June 30	−	−.06	−.07

* From data given in the *Report of the Comptroller of the Currency.*
† Determined by inspection of the Index Chart.

The fluctuation of the ratio of business loans to speculative loans for all national banks is substantially the same as that in New York. All except two changes from year to year agree in sign with the changes for New York banks (Table II). The data indicate, therefore, that the cyclical movements of business and speculation affect the composition of bank loans for the entire country.

What are the relationships during the period 1903–14 among (1) the aggregate loans and discounts of all national banks except New York City, (2) business activity as shown by curve B of the Index Chart, (3) the aggregate loans and discounts of New York Clearing House banks, and (4) speculation as shown by the average price of industrial stocks? In order to answer this question we shall have to make a detailed comparison of the four statistical series for the period in question.

Figures for the aggregate loans and discounts of all national banks outside New York City are available for five dates of call each year. During the period 1903–13, considered as a whole, there was a pronounced upward movement; the average annual increment being 251.8 million dollars per year.[1] During the same period there was a regular seasonal movement, the indices of seasonal variation[2] being 99.3, 100.1, 99.8, 100.5, and 100.4 at the five dates of call approximately in February, April, June, September, and November. Correcting the actual items for seasonal variation and normal growth and plotting the corrected figures we obtain a curve (O, Chart III) which pictures the fluctuations of bank loans during the alternating periods of business prosperity and depression. Comparison of the curve thus obtained with curve B of the Index Chart reveals a surprising degree of similarity between the two.

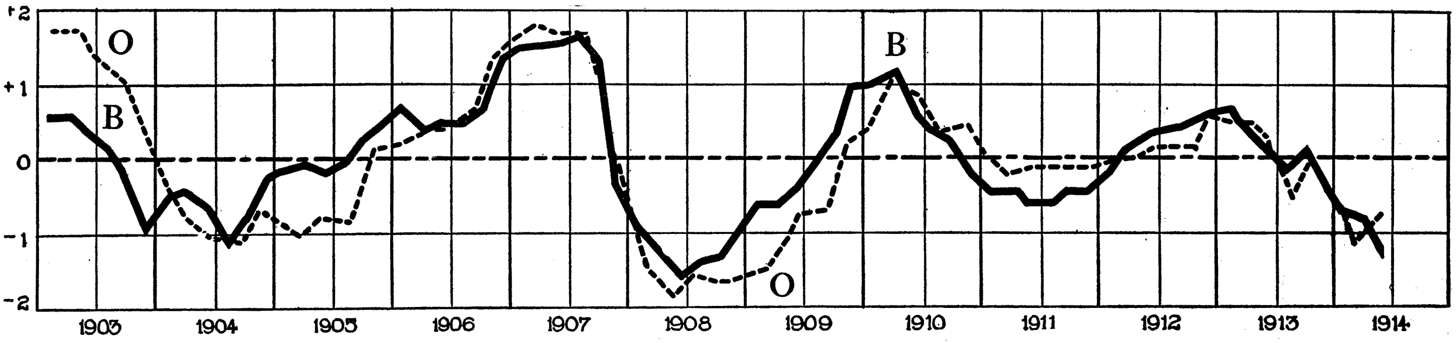

Chart III. — Comparison of Loans and Discounts of All National Banks Outside New York City with Curve B of the Index Chart, 1903–14. Both Series are Corrected for Seasonal Variation and the Growth Element; the First Series is for Dates of Call and the Second is Bi-Monthly.

It is clear that, for the period examined, the volume of loans of banks outside New York City and business activity fluctuated together. The relationship between loans of New York City Clearing House banks and business activity, however, is inverse as will be evident from an examination of Chart IV. When business was depressed in 1904, 1908, 1911, and 1914 New York loans were high; when business was active in 1906–07, 1910, and 1912–13 New York loans were low.

Comparison of the fluctuations of New York bank loans (L) with the fluctuations of speculative activity as represented by the average prices of industrial stocks (S) is also made in Chart IV. The wave movements of stock prices lag from 6 to 18 months after those of New York bank loans and precede those of business activity by 4 to 10 months.

The foregoing discussion of bank loans and the business cycle for the period 1903–14 may be summarized as follows: First, the ratio of business loans to speculative loans of New York national banks, varies in accordance with the relative positions of the business and speculative curves of the Index Chart (Table II). Second, the cyclical movements of the loans of outside banks are almost identical with those of business activity as shown by curve B of our Index Chart (Chart III). Third, total loans and discounts of all national banks outside of New York City and total loans, discounts and investments of New York City Clearing House banks both fluctuate in well marked cycles. The cyclical movements of the two series, however, are inverse; i. e. an increase in the loans of outside banks is a signal for a decrease in loans of New York banks (Charts III and IV). Fourth, the cyclical movements of the loans of New York banks are the inverse of the movements of business; i. e. when business is depressed New York loans are large and when business is active New York loans are small (Chart IV). Fifth, New York loans increase most rapidly just after a period of liquidation in business. Expansion of New York loans usually precedes by a considerable interval the rise of security prices.

During a period of business depression, then, we find that the loans of outside banks are low, and New York bank loans are high. At such a time security prices are low but funds are flowing into New York from outside banks and bank credit is available in New York at low rates of interest. Presently security prices rise and later business revives. With a revival of business outside banks withdraw their funds from New York. The deposits (and loans) of New York banks decline and aggregate loans of outside banks increase. Security prices continue to increase, however, perhaps through the entry of the general public into the security markets. Then follows a period of financial strain characterized by low aggregate loans in New York, high aggregate loans outside New York, decreasing security prices and active business. The strain continues until it is relieved by liquidation in commodity markets. Funds then flow to New York and the cycle with which we started is completed.

Between November 17, 1919 and November 15, 1920 the net amounts due to national and other banks by New York City national banks fell from 1023 to 819 mil-

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[1] The linear secular trend, 1903–13 is represented by the equation $y = 251.8x + 3996$; the origin is in the middle of the year 1908.

[2] Computed according to the method explained in the Review for January 1919, pp. 18–31. The average for the year is 100.

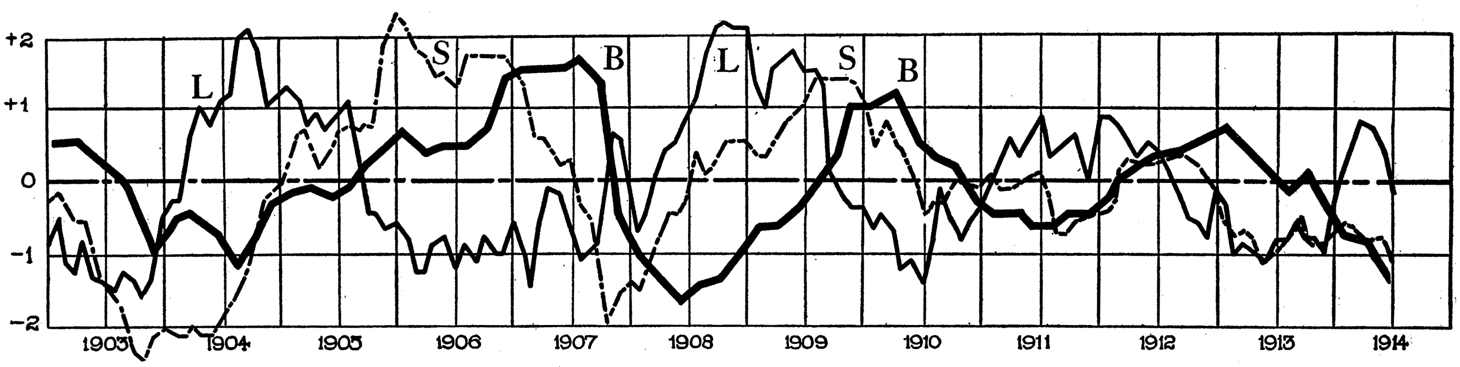

Chart IV. — Comparison of Loans, Discounts, and Investments of New York Clearing House Banks (L) with Curve B of the Index Chart and the Average Price of Industrial Stocks (S), 1903–14. The Three Series are Corrected for Seasonal Variation and the Growth Element.

lion dollars. This decline of outside bank balances in New York City during a period of active business and financial strain is the same phenomenon that we have observed in pre-war times.[1] The distinction between the present and pre-war times is the opportunity that the banks now have of borrowing from the federal reserve system, an opportunity of which they have availed themselves. During the period of business expansion and financial strain between June 30, 1919 and November 5, 1920 the total accommodation of the eight hundred member banks, rendering weekly reports, at the federal reserve banks increased from 1351 to 2279 million dollars. During the same period the accommodation extended to New York City banks by the New York Federal Reserve Bank increased from 455 to 891 millions. The accommodation extended by the reserve banks reached a maximum on the last date named, November 5, 1920, for both New York banks and all banks reporting. Since November 5 the aggregate accommodation granted to reporting banks at the federal reserve banks has declined to 1873 millions (on February 11, the date of the last report available at this writing).

During the period of business expansion from the spring of 1919 to the spring of 1920 and the subsequent period of financial strain in the summer and autumn of 1920 the banking situation developed along the lines indicated by our study of the pre-war period for these phases of the business cycle. Deposits of outside banks in New York declined; at the same time the accommodation at the federal reserve banks of both New York and outside banks increased. Will the usual pre-war phenomenon, a flow of funds to New York from the country in times of depression, persist under the federal reserve system?

There is no evidence in February 1921 of a flow of funds from country banks to New York. There is evidence, however, that banks outside New York City are steadily reducing their debts to the federal reserve banks. There has been a fairly steady decline of the accommodation extended to reporting member banks *outside* New York City from the maximum of 1414 millions reached on October 1, 1920 to the minimum of about 1040 millions on February 4 and 11, 1921.

The extension of credit to member banks by the federal reserve banks has undoubtedly altered the time and extent of movement of funds between New York and outside banks. At the present writing it appears improbable that funds will flow toward New York in any considerable volume until banks outside New York City further reduce their obligations to the federal reserve banks.

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[1] The net amounts due to national and other banks (except federal reserve banks) by New York City national banks varies inversely with business activity. Thus, New York City banks owed other banks 642 million dollars on September 6, 1904 when business was depressed; the figure fluctuated in the neighborhood of 500 millions during the active period of 1906–07; in the depression of 1908 the figure reached 700 millions and during the subsequent period of activity in 1909–10 it fluctuated around 600 millions; in 1911 the figure again went over 700 millions, and in 1912 it receded during the year to 586 millions; in the depression of 1914 the figure reached the new maximum of 791 millions. During 1915–17 the credits in New York of outside banks rapidly expanded to the record-breaking figure of 1228 millions on March 5, 1917. With the expansion of business in 1919–20 the figure dropped from 1023 millions on November 17, 1919 to 819 millions on November 15, 1920.